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Disaster Risk Reduction and Management (DRRM) Communication in Public Colleges of Punjab, Pakistan

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ABSTRACT

Communication on Disaster Risk Reduction and Management (DRRM) is an essential element of institutional preparedness in disaster-prone areas. Pakistan is prone to the occurrence of both natural and human-caused disasters that can interfere with the learning process and endanger the lives of students. This research investigates DRRM communication practices in public colleges in the district of Chiniot, Punjab, Pakistan. Following a qualitative research design, it relies on semi-structured interviews with twenty principals of public colleges to investigate the current communication system, emergency information delivery processes, evacuation planning and school drills, coordination among disaster management authorities, and issues in implementing school safety measures. Thematic analysis of interview data showed that most principals are highly aware of the DRRM communication systems. Mobile communication, teacher-mediated instruction, and announcements are common ways to share information during emergencies in colleges. Most institutions have evacuation plans, though not all conduct regular drills. Principals also noted that they coordinated with education departments and disaster management authorities, especially in the event of a large-scale disaster such as floods. Despite these advantages, several weaknesses were identified, including power outages, unstable communication networks, a lack of emergency resources, and insufficient staff-specific DRRM training. The research finds that the conceptual framework of DRRM communication structures in the outer colleges of Punjab has been developed, whereas their practical implementation is constrained by systemic and infrastructural constraints.

Keywords: Disaster Risk Reduction, Disaster Risk Management, Disaster Communication, School Safety, Qualitative Study

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INTRODUCTION

Pakistan is among the most vulnerable countries in South Asia, which is marked by a high occurrence of both natural and human-made disasters, such as floods, earthquakes, heat waves, fires, and epidemics. Such disasters are dangerous to people's lives and property, and the social infrastructure and education sectors are no exception. Schools and colleges are settings where large numbers of students and staff come together daily, which increases the risk of disasters and their effects. As such, systemic readiness, their functionality, and (above all) useful and reliable communication mechanisms capable of delivering timely, clear, practical information before and during emergencies will make schools and colleges safer (United Nation Disaster Risk Reduction, 2025, 2026; World Health Organization, 2025; Centers for Disease Control and Prevention, 2024).

The transition of the nation towards a more proactive risk-reduction orientation, rather than the mostly reactive approach to disaster management, was institutionalized in 2010 with the enactment of the National Disaster Management Act, 2010, which established the National Disaster Management Authority (NDMA) as well as provincial and district equivalents. According to this framework, preparedness, early warning, coordination, and communication are considered key functions of disaster risk reduction and management (DRRM) (Government of Pakistan, 2010; National Disaster Management Authority, 2026). Communication is at the heart of DRRM, as timely and comprehensible information enables quick decision-making, evacuation behaviour, coordination with responders, and the avoidance of preventable losses (Bradley et al., 2014; CDC, 2024; UNDRR, 2025).

The communication of DRRM in the education sector is the most crucial, as the schools and colleges have the responsibility to not only preserve the lives of the students and staff in times of disaster but also to liaise with the education departments and the disaster management departments. Another aspect of enhancing the resilience of the workforce long-term is the establishment of disaster awareness, preparedness competencies, and risk-informed attitudes in young people by the education institutions (Iqbal & Nauman, 2024; Tyas & Nurrahmadani, 2025). The standard of such roles relies on the quality of the risk information communication, interpretation, credibility, and implications on the institutional level (CDC, 2024; WHO, 2025).

Seasonal flooding, heat waves, health crises due to smog, and weaknesses in infrastructure are some of the various hazards that Punjab, the most populous state in Pakistan, is exposed to. There is an increased threat to districts like Chiniot as it is exposed geographically and has climate stressors and institutional capacity limitations. Public colleges are run by provincial education authorities and are supposed to coordinate with national and provincial disaster management systems, such as NDMA priorities and directions. Despite the existence of policies and plans, the research and practice show that the implementation of school/college safety and DRRM communication may be skewed most of the time due to infrastructural limitations, the lack of training, difficulties in coordination, and the weakness of the communication systems in the face of power or connectivity outages (Pivoto, 2025; Organisation for Economic Co-operation and Development, 2025).

Community-based response, emergency relief, and infrastructure resiliency have been the main areas of concentrated literature available in Pakistan. Although these aspects are important, there is limited empirical research regarding institution-level DRRM communication that specifically focuses on the education sector, particularly at the college level. It is not yet clear enough how (a) disaster information is distributed in colleges, (b) disaster evacuation plans and exercises are disseminated among students, and (c) operational connections between colleges and disaster management agencies should operate during an emergency. It is crucial to understand these gaps, as risk communication failures tend to result in confusion, slow reaction, and preventable damage (Bradley et al., 2024; CDC, 2024).

The gaps covered in this study include Disaster Risk Reduction and Management (DRRM) communication within the context of public-sector education institutions in Punjab, Pakistan, and particularly in District Chiniot public colleges. The qualitative approach of the study relies on the views of principals to provide the stakeholder-based understanding of institutional practices, lines of communication, routines of preparedness, and coordination mechanisms (Weick & Sutcliffe, 2015; Oda, 2025).

The paper is academically and policy relevant. In the academic sphere, it adds to the small body of work on the topic of disaster communication in Pakistan within colleges. In practice, it provides evidence to guide NDMA-oriented and provincial planning, institutional preparedness efforts, and capacity-building measures to enhance disaster communication in educational establishments. To ensure the safety of students, the continuity of the educational process, and the resilience building in the disaster-prone regions of Punjab, the DRRM communication needs to be strengthened (NDMA, 2026; UNDRR, 2025).

Significance of the Study

The importance of the research is scholarly, policy, institutional, and societal because it covers a little-researched area of the disaster management sector in the education sector. The research contributes to the knowledge on the operationalization of preparedness and safety through the institutional level of operation by addressing the topic of DRRM communication in Pakistani educational institutions in Punjab.

For institutions and administrators, the study can provide insights into leadership practice, highlighting the importance of various communication systems, evacuation planning, drills, and coordination mechanisms. This may assist the principals and education managers to enhance preparedness through lessening confusion and enhancing the effectiveness of response (Bahmani et al., 2023; CDC, 2024).

Problem Statement

Exposure to natural and man-made disasters is a chronic problem facing the education sector in Pakistan, especially in terms of the safety of the students and members of staff in case of any emergency. Despite the existence of national and provincial disaster management frameworks, the

institutional response and the implementation of DRRM in the education context are greatly dependent on the effectiveness of the disaster information communication, comprehension, and action. The Punjab public schools and colleges are supposed to adhere to the direction of DRRM, have evacuation plans, and communicate with disaster management authorities. Nonetheless, experience and study indicate that there remains a disjunction between policy purpose and functioning capability, especially in resource-poor districts. Power outages, poor connectivity, and missing standardized procedures and training may result in delays, misunderstandings, and increased risk during an emergency.

Research Objectives

Following are the research objective of the study:

• To investigate Disaster Risk Reduction and Management (DRRM) communication within the school level in the state of Punjab, Pakistan, specifically in the District of Chiniot and within the capital of the District, which is a college.

• To understand the knowledge and application of DRRM communication systems by principals in public colleges.

• To investigate protocols that are utilized to spread emergency information in colleges.

• To evaluate evacuation planning and drills' contribution to preparedness.

• To examine the alignment of colleges with the education department and disaster management authorities.

• To determine the issues that institutions experience when executing effective school safety and DRRM communications.

• To evaluate the level of awareness and school safety perceptions amongst students, evacuation procedures, and emergency communication.

Research Questions

RQ 1: What are the perceptions and misconceptions of communicating and using DRRM communication systems by the principals of public colleges in District Chiniot?

RQ 2: How do colleges distribute emergency information to college students and college staff?

RQ 3: What are the means of communicating and implementing evacuation plans and drills in public colleges?

RQ 4: What is the coordination of colleges with education departments and disaster management authorities in the case of an emergency?

RQ 5: What are the difficulties in the way of effective communication on DRRM and the application of school safety?

RQ 6: To what extent are the students in their colleges aware of disaster risks, evacuation procedures, and emergency communication?

LITERATURE REVIEW

Disaster Risk Reduction and Management (DRRM) is defined as organized measures to avert, lower, and handle catastrophe risk by way of preparedness, mitigation, reaction, and renovation. The Sendai Framework on Disaster Risk Reduction 2015–2030 focuses on the transition into the proactive reduction of risks rather than the reactive response, enhancing the capacity of institutions, and enhancing the quality of early warning and communication systems (UNDRR, 2025). It is well-known that risk communication is critical to effective DRRM since it allows providing early warnings, coordination, making informed decisions, and acting to protect. The absence of effective and authoritative communication leads to the ineffectiveness of emergency plans in practice (Bradley et al., 2014; CDC, 2024; UNDRR, 2025).

The vulnerability is unique to the education institutions, as they bring large groups of people, and students are used to organized instruction in case of emergencies. The preparedness in schools and colleges must be communicated clearly, quickly, regularly, and focused on actions (CDC, 2024; WHO, 2025). Institutional leadership influences the way the DRRM policies are carried out, how the responsibility is distributed, and the process of decision-making in times of uncertainty. The focus of high-reliability approaches is on leadership attention, sense-making, and disciplined coordination as factors that determine emergency preparedness (Weick & Sutcliffe, 2015). Most current research also emphasizes the need to work on the development of DRR competencies and formal training systems among educators and future school leaders (Mutseekwa, 2023; Oda, 2025).

The school-based DRRM involves evacuation planning and drills. It is demonstrated that preparedness programs, including drills, can enhance the level of hazard awareness and response behaviour, but their success is limited in terms of the clarity of communication, frequency, and learning-based debriefing (Bahmani et al., 2023). Communication design is also important: the messages about the disaster should be understandable and relevant to a specific place, as well as be provided via the channels that would be operational even in the case of an outage (Prasetyo et al., 2024; Ahmed et al., 2020).

The successful implementation of DRRM in education requires the alignment of institutions with disaster management officials, which would guarantee uniform issuance of warnings, quick availability of resources, and a parallel implementation process. Early warning systems (EWS) are more robust when they combine both scientific data and local knowledge and easily defined channels of dissemination (Hermans et al., 2022). The necessity to have strong and backup communication networks in the areas is also supported by the evidence of the region (Organisation for Economic Co-operation and Development, 2025). The national plans and strategies developed by the National Disaster Management Authority (NDMA) shape disaster governance in Pakistan. The previous level of national planning also emphasizes the importance of coordination and operational readiness (NDMA, 2026). In Pakistan's disaster communication environment, technology-mediated

communication is also gaining ground; a study of the PDMA Madadgar mobile application reports the use of mobile-based warnings and interactive reporting features to enhance disaster communication systems (Jan et al., 2025; Minhas et al., 2025).

Theoretical Framework

This paper draws on accumulated knowledge of risk communication, disaster management, and organizational preparedness theories to describe how information distribution, awareness, and institutional coordination affect safety outcomes in disaster scenarios. It uses a theoretical framework that incorporates Risk Communication Theory and Disaster Risk Reduction (DRR) Theory, which serves as a detailed lens for analyzing DRRM communication in public schools in Punjab, Pakistan.

Risk Communication Theory

The Risk Communication Theory focuses on the communication process involved in the transfer of information about risk to both the authorities and the people in order to have an impact on the attitudes, perceptions, and behavior (Slovic, 1987). The theory emphasizes that people do not react to the risk information in terms of pure technical facts alone, but their reactions are influenced by the clarity of their messages, the trust in information sources, and the past.

Within the framework of this paper, the Risk Communication Theory reveals the effect of clarity and credibility of the messages on disaster mitigation in the form of understanding disaster risks and response measures among the students. In case of ambiguous or delayed emergency information, students will have a lower estimation of the risks or react improperly to emergencies. This theory justifies the relevance of the study to the focus of the study on communication clarity, reliability, and trust as key elements of effective DRRM communication within the education institutions.

Disaster Risk Reduction (DRR) Theory

The theory of disaster risk reduction aims at minimizing vulnerability and strengthening resilience by preparing, mitigating, and building capacity instead of responding to the disaster on the basis of disaster response (UNDRR, 2025). DRR theory acknowledges communication as an essential facilitating aspect that connects policy frameworks, institutional action, and community behaviour. In our research, the DRR theory serves as the background of the investigation of the role of institutional preparedness, coordination with disaster management authorities, and training to achieve effective results in school safety. The theory underpins the belief that schools do not passively receive the effects of disasters, but they are active participants who minimize the risk by planning, creating awareness, and communicating.

Theories Combination with the Study

These theories explain the relationships advanced in the conceptual framework together. The Risk Communication Theory and the DRR theory describe the relationship between awareness and school safety outcomes, including preparedness and confidence. These hypothetical channels are broken by

the barriers of communication, like power interruptions and network failures, which lower the efficacies of communication involved in DRRM. The integrated theoretical framework offers a solid baseline to the analysis of DRRM communication in the Punjab public schools and is relevant to the research questions, research hypotheses, and methodological approach to the research.

METHODOLOGY

The research design used in this study was a qualitative research design that sought to examine Disaster Risk Reduction and Management (DRRM) communication and school safety measures in the public colleges of District Chiniot, Punjab, Pakistan. The qualitative approach was chosen due to the nature of the study, which was to gain insight into how DRRM communication is done, viewed, and experienced by the major stakeholders. Disaster-related research studies are especially appropriate for qualitative enquiry, in which the communication processes are influenced by the institutional roles, vulnerability to the situation, and human experiences (Creswell & Poth, 2018).

The research was informed by an interpretive approach where it was realized that the meanings assigned to the disaster preparedness and communication differ among the stakeholders and contexts. In such a way, it was possible to conduct a deeper study of school safety awareness, evacuation communication, and institutional preparedness in the context of the general school.

The study was carried out in District Chiniot in the province of Punjab in Pakistan. The district was chosen intentionally because it has experience of seasonal floods, extreme heat events, and other emergency cases that make school campuses vulnerable. District Chiniot public colleges are governed by provincial education authorities and are supposed to match their safety and disaster preparedness plans with guidelines at the national level provided by the National Disaster Management Authority (NDMA) and the Provincial Disaster Management Authority (PDMA Punjab).

Sampling Method

The method used to select participants was purposive sampling, with the selection criteria being the direct knowledge and experience with regard to school safety and disaster preparedness. In qualitative studies, purposive sampling is a prevalent sampling method to get the rich and pertinent data of information-laden participants (Patton, 2015).

The key stakeholders in the qualitative aspect included principals of twenty (20) District Chiniot public colleges. Principals were chosen due to the inclusion of leadership in the planning of the institutions, implementation of safety policies, communication with the district authorities, and emergency communication. Principals were interviewed in a semi-structured manner on the topic of the mechanisms of DRRM communication, evacuation plans, the preparedness of staff and students, and institutional challenges.

Semi-Structured Interviews

The main method of collecting qualitative data used to investigate the topic of Disaster Risk Reduction and Management (DRRM) communication practices in public colleges of District Chiniot, Punjab, Pakistan, was semi-structured interviews. This approach was chosen due to the possibility of exploring the experiences and views of participants in a detailed manner but still having enough structure to guarantee the uniformity of responses to the interview (Creswell & Poth, 2018).

The interviews were carried out with the principals of twenty (20) public colleges because they are the people holding the most administrative and decision-making positions in the safety planning of schools, communication during emergencies, and coordination with education and disaster management agencies. A set of open-ended interview questions was created to encourage the discussion of the institutional DRRM communication methods, emergency preparedness, evacuation plans, awareness of staff and students, and difficulties in disaster cases.

The semi-structured template helped the researcher to delve more into the emanating issues, clarify answers, and probe into the context-specific practices, as well as give the participants the latitude to give elaborate descriptions of their experiences. This was a favourable method when it came to comprehending the dynamics of communication in emergencies, where practice might vary depending on the institutional capacity, resources available, and exposure to risks in that area. The interviews were conducted in Urdu, and interviewees were allowed to use local expressions as needed to ensure they were understood. The interviews took about 30–45 minutes and were conducted in a quiet environment on the college premises to minimize distractions and ensure confidentiality. All interviews were audio taped with prior informed consent to facilitate accuracy and completeness of data.

Field notes and audio recordings were used to capture nonverbal information, context, and reflective observations pertinent to DRRM communication practices. Verbatim audio transcriptions were made and, when needed, translated to English without distorting the original meaning of what the participants said. Semi-structured interviews enabled the study to produce rich and context-sensitive data that helped in developing a subtle concept of the implementation and experience of DRRM communication in the context of the public colleges in Punjab.

DATA ANALYSIS

The interpretation of the interview information indicated that most of the college principals in District Chiniot are highly familiar with the available Disaster Risk Reduction and Management (DRRM) communication systems adopted in their institutions. The principals were shown to be aware of the available protocols in the delivery of emergency information, such as the use of announcements, teacher-led instructions, mobile communication platforms, and administration coordination. The majority of the respondents reported that emergency messages are usually

cascaded downwards, starting with the principal and then forwarded to the teachers and then to the students in order to facilitate faster information distribution during emergency circumstances.

Regarding evacuation planning and drills, principals indicated that formal evacuation plans are available in most colleges, and drills are also held on a regular basis to prepare students and staff on how to deal with emergencies. Although the number and frequency of drills differed by institution, the study participants admitted the importance of drills in enhancing preparedness and lessening panic in case of emergency events. Another issue that was raised by principals was the importance of teachers in directing students through evacuations and a peaceful flow to safe areas. The results also suggest that college principals have coordination with the education departments and disaster management agencies, especially in large-scale disasters like floods or natural calamities. This coordination was said to be important in getting official directives and class-suspension notices as well as safety notices. The extent of coordination was, however, usually subject to the degree of the disaster and the communication infrastructure at hand.

This institutional understanding and readiness notwithstanding, principals cited a number of obstacles to the application of school safety. The frequent challenges that were reported were power failures, poor access to emergency equipment, poor mobile or internet connection, and staff lack of routine DRRM training. Other principals also reported the challenges of making sure that students are engaged in drills consistently and have current safety resources. These issues were seen as limitations that can apply to the effectiveness of the communication of the DRRM under real disaster circumstances.

In sum, the interview results indicate that the leadership of the college in the District of Chiniot is highly aware of and willing to implement DRRM communication and school safety, yet the lack of resources and issues in the system still prevents the comprehensive and uninterrupted adoption of the effective disaster preparedness strategies.

Themes Matrix: DRRM Communication in Public Colleges of Punjab, Pakistan

Table 1:Awareness and Understanding of DRRM Communication Systems

Codes (Initial)	Sub-Themes	Main Theme	Illustrative Interview Excerpts	Interpretation
Knowledge of DRRM	**Institutional familiarity**	**Awareness of DRRM Communication Systems**	**"We already have a proper system for emergencies." (P4)***	**Principals possess conceptual understanding of DRRM**
Emergency planning	**Administrative preparedness**		**"Teachers and staff know their roles." (P9) ***	**Leadership awareness supports preparedness**
Policy awareness	**Alignment with guidelines**		**"We follow instructions from higher authorities." (P1) ***	**Policy awareness exists but depends on top-down flow**

* (P)Principal interview.

Analytical Insight

This theme indicates that institutional leadership awareness is strong, aligning with organizational preparedness theory. Awareness does not, however, necessarily equate to operational consistency.

Table 2: Emergency Information Dissemination Practices

Codes	Sub-Themes	Main Theme	Illustrative Interview Excerpts	Interpretation
Announcements	**Verbal communication**	**Procedures for Disseminating Emergency Information**	**"Announcements are made immediately." (P7)**	**Traditional methods remain dominant**
Teacher mediation	**Hierarchical flow**		**"Teachers inform students in classrooms." (P12)**	**Cascading communication is relied upon**
Mobile messaging	**Digital communication**		**"WhatsApp groups are used if possible." (P3)**	**Digital tools are supportive but not primary**

* (P)Principal interview.

Analytical Insight

Communication follows a hierarchical and linear pattern, which is efficient but vulnerable during system failures, reflecting CERC model limitations in low-resource contexts.

Table 3: Evacuation Planning and Safety Drills

Codes	Sub-Themes	Main Theme	Illustrative Interview Excerpts	Interpretation
Exit routes	**Physical preparedness**	**Evacuation Planning and Drills**	**"Students know where to go." (P10)**	**Basic evacuation awareness exists**
Safety drills	**Practice-based learning**		**"Drills are conducted occasionally." (P14)**	**Drills are irregular**
Staff roles	**Guided evacuation**		**"Teachers guide students during evacuation." (P6)**	**Staff play central role**

* (P)Principal interview.

Analytical Insight

Evacuation planning is available but not practised regularly, which limits the behavioural training required for real-life emergencies.

Table 4: Coordination with Disaster Management Authorities

Codes	Sub-Themes	Main Theme	Illustrative Interview Excerpts	Interpretation
Government instructions	**Top-down coordination**	**Coordination with Authorities**	**"We receive orders during floods." (P2)**	**Coordination is reactive**
Education department	**Administrative linkage**		**"District office informs us." (P11)**	**Dependence on external direction**
Disaster alerts	**Crisis-based engagement**		**"Only during major disasters." (P16)**	**Lack of continuous engagement**

* (P)Principal interview.

Analytical Insight

Coordination is incidental rather than proactive, indicating disparities between NDMA policy intentions and institutional reality.

Table 5: Problems in Enforcing School Safety

Codes	Sub-Themes	Main Theme	Illustrative Interview Excerpts	Interpretation
Power failure	**Infrastructure issues**	**Implementation Challenges**	**"Power failure creates communication problems." (P15)**	**Infrastructure undermines plans**
Network failure	**Technological barriers**		**"Internet does not work during emergencies." (P5)**	**Digital dependency is risky**
Limited resources	**Resource constraints**		**"We lack safety equipment." (P8)**	**Preparedness limited by funding**
Lack of training	**Capacity gaps**		**"Staff need proper training." (P13)**	**Knowledge–practice gap**

* (P)Principal interview.

Analytical Insight

Problems are institutional rather than personal, which means that better communication requires a structural investment, and not just a sense of awareness.

Table 6: Leadership Commitment and Responsibility

Codes	Sub-Themes	Main Theme	Illustrative Interview Excerpts	Interpretation
Responsibility	**Leadership accountability**	**Leadership Role in DRRM**	**"The principal is responsible in emergencies." (P1)**	**Leadership centrality**
Decision-making	**Crisis leadership**		**"Immediate decisions are taken." (P17)**	**Leadership acts as command centre**
Student safety	**Moral obligation**		**"Students' safety is our priority." (P9)**	**Ethical commitment evident**

* (P)Principal interview.

Analytical Insight

Principals perceive DRRM as a leadership responsibility, supporting organisational preparedness theory.

Table 7: Cross-Theme Synthesis Matrix

Theme	Strength Identified	Gap Identified	Policy Implication
Awareness	**Leadership knowledge**	**Inconsistent execution**	**Need standard protocols**
Communication	**Fast information flow**	**System dependency**	**Redundant communication**
Evacuation	**Basic plans exist**	**Irregular drills**	**Mandatory drill schedules**
Coordination	**Authority linkage**	**Reactive approach**	**Continuous engagement**
Challenges	**Problem recognition**	**Resource scarcity**	**Infrastructure investment**

Overall Analytical Summary Discussion

The theme matrices indicate a conceptual but operationally weak understanding of DRRM communication in the public colleges of District Chiniot. Preparedness can be supported with leadership awareness, hierarchical communication, and evacuation planning, but infrastructural constraints, little training, and reactive coordination can undermine implementation. The results support the disaster communication theories that highlight the importance of redundancy, trust, and constant preparedness as opposed to episodic response.

This section addresses the most important themes that were identified in the semi-structured interviews with prison principals in the District of Chiniot, Punjab, in reference to Disaster Risk Reduction and Management (DRRM) communication. The results are explained against the existing literature and national disaster management frameworks to put the institutional practices, strengths, and limitations into perspective.

Theme 1: *Good Institutional Sensitivity of DRRM Communication Systems*

According to the findings of the interviews, the majority of college principals have a good knowledge of the current DRRM communication systems in their companies. The knowledge of informal and formal mechanisms that disseminate the information about the disaster was also shown as a sign of administrative awareness and adherence to the expectations of the institutions (principals). One principal stated.

"We already have the system in place. The information is disseminated instantly in case there is any emergency through teachers, announcements, and mobile communications".

The results are not only consistent with past research proposing that leadership awareness is the key determinant of the effectiveness of disaster preparedness in the schools (Creswell & Poth, 2018; Shiwaku et al., 2016) but also confirm its critical importance. The National Disaster Management Authority also emphasizes the importance of institutional leadership to ensure that DRRM communication protocols are understood and implemented in schools (Chaudhary et al., 2025). Preparedness for disaster among principals is an excellent starting point; on the other hand,

awareness cannot produce effective implementation of the disaster preparedness in actual emergencies.

Theme 2: *The Existing Processes of Emergency Information Dissemination*

Principals always mentioned the existence of the emergency information disseminating procedures, which usually had a hierarchic line of communication between administration and teachers, and consequently, students. The popular mediums were public address systems, classroom announcements, and mobile messaging applications. A participant described it as follows.

"The administration notifies the teachers whenever there is an alert, and teachers in turn instruct students in the classrooms".

This systematic method is based on the results of the disaster communication literature that see the significance of well-defined and clear communication channels to minimize the development of confusion in case of disaster (Coombs, 2007; UNDRR, 2025). The same trends have been witnessed in learning institutions in disaster-prone areas, where cascading communication will ensure quick delivery of information (Fakhruddin et al., 2020). Nonetheless, one can easily be susceptible to a linear chain of communication failure in the occurrence of key personnel and communication infrastructure.

Theme 3: *Preparedness and the place of the drills in evacuation planning*

The other noticeable theme was the presence of evacuation plans and periodical drills used to train students and staff on how to respond to emergencies. Principals recognized that drills are an essential activity in introducing students to the evacuation routes and lowering the probability of panic in real emergency situations. One principal noted.

"We have evacuation drills rather infrequently, but students are aware of the way out and safety measures".

The result conforms with the reports that emphasize the role of evacuation drills in disaster preparedness in an educational context (Schildkraut et al., 2024). Drills increase procedural knowledge and confidence in the students and staff, which leads to a safer result in case of an emergency. The instructions of NDMA (2025) also provide regular drills as the institutional preparedness. Nevertheless, the difference in frequency as indicated by principals may be indicative of inconsistent application, which is reflective of the issues expressed by Lorenzo and Sarmiento (2018) and Tirumala et al. (2025) about the unequal preparedness activities in institutions with limited resources.

Theme 4: *Coordination with Education and Disaster Management Authorities.*

Principals cited that they had coordination with the education departments and the disaster management authorities, especially in times of large-scale emergencies like floods or extreme

weather conditions. This organization was said to be important in receiving formal notices and safety warnings as well as decisions about class suspensions. A participant stated.

"We get orders from higher authorities, particularly in times of flood, and then dispose of them on the college level".

The result confirms the literature that highlights inter-agency coordination as one of the foundations of successful disaster management (UNDRR, 2025). NDMA and PDMA Punjab structures emphasize the necessity of having vertical coordination of the nations, provinces, and institutions to have a timely and accurate flow of information. Nevertheless, it is also mentioned that such coordination is very reactive but not proactive, especially at lower-tier institutions (Toyado, 2020 Minhas et al., 2022).

Theme 5: *Problems of School Safety Implementation*

Even with the institutional awareness and the procedures that are in place, principals found a number of obstacles in adopting the school safety measures. Power outages, the lack of access to emergency equipment, poor mobile or internet connectivity, and the lack of staff-specific training in DRRM were among these challenges. One principal expressed.

"Resources are the primary issue. When there is a power outage or network problems, communication is extremely hard".

This theme is also representative of the overall disaster communication literature, which repeatedly singles out the infrastructural and resource constraints as the significant impediments to the successful implementation of DRRM in the developing contexts (Budimir et al., 2020; Fakhruddin et al., 2020). In Pakistan, these difficulties are even more acute in semi-urban and rural districts, where one cannot presuppose reliability of technologies. Such limitations may sabotage even the planned communication systems, and this aspect supports the necessity of redundant, low-tech, and community-based communication strategies suggested by NDMA (2025).

Synthesis of Findings

Overall, the discussion demonstrates the institutional willingness of the leadership level, which is accompanied by the well-developed communication practices and coordination tools. Nonetheless, the issue of infrastructure, training, and uniformity impacts the overall performance of DRRM communication in the process of real disaster events systemically. Such discrepancy between policy awareness and operational capacity reflects the results of the national and international research, which indicates that in order to increase the level of school-based DRRM communication, it is necessary to increase both the administrative level of knowledge and long-term investments in resources, training, and inclusive methods of communication.

Table 8: Theory–Finding Alignment Table

Theory / Model	Key Theoretical Assumptions	Empirical Findings from the Study	Alignment and Interpretation
Risk Communication Theory (Slovic, 1987)	Risk information should be understandable, credible and clear so as to affect perception and behaviour.	Principals indicated that the most frequent way of disseminating emergency information is via announcements and teacher mediated communication which make certain that there is clarity at the classroom level.	The results are in favour of the theory and demonstrate that explicit, inter-personal communication can help in understanding, whereas excessive dependence on individual channels can make people more vulnerable in times of disruptions.
Crisis and Emergency Risk Communication (CERC) Model (Reynolds & Seeger, 2005)	Crisis communication should be prompt, precise and action oriented to influence the protective behaviour.	Hierarchical communication is channelled to ensure that the messages transmitted are emergency messages that are passed out speedily and during an emergency, evacuation instructions are given orally.	Semi-alignment: action-oriented preparedness is constrained by timeliness but mixed in terms of inconsistency in exercises and absence of standardised messages.
Disaster Risk Reduction (DRR) Theory (UNDRR, 2015)	The Preparedness, mitigation, and institutional capacity of Disaster Risk Reduction is also more efficient in reducing the consequences of such disasters than reactive response.	Colleges possess evacuation plans and rudimentary DRRM designs and interact with authorities only in the event of active disasters.	The results suggest that there is a discrepancy between theory and practice of DRR and that these stages are implemented reactively, and not proactively.
Organisational Preparedness Theory (Weick & Sutcliffe, 2015)	Leadership, planning, coordination, and training; the key to organisational resilience.	Principals indicated high levels of accountability over the safety of students and they are very active in dealing with emergencies. Implementation is limited, however, by the lack of training and resources.	Close fit in leadership commitment, low institutional capacity undermines preparedness effects.
Sendai Framework for DRR (UNDRR, 2015)	Insists on governance, communication and stakeholder coordination as a disaster resilience.	Education and disaster authorities are involved but largely in an ad hoc manner based on crisis.	Results show inadequate institutionalisation of the principles of Sendai at the school level, which highlights the necessity of coordination on a regular basis.

Enhancing the Analytical Credibility of the Qualitative Results

Systematic data collection, a clear analysis procedure, and theoretical integration reinforce the credibility of this qualitative study. To start with, semi-structured interviews enabled the participants to give detailed and experience-based information and also enabled the consistency in the interviews. This strategy helped to create depth but at the same time to compare the responses among institutional settings.

Second, thematic analysis was performed using the structured coding process that developed initial codes into sub-themes and macro-themes. NVIVO-like coding trees and theme matrices were

developed to provide transparency in the analytics, and the process of converting raw interview data into interpretive outcomes was properly documented. This procedural development decreases the subjectivity of the researcher and increases the reliability of the analysis.

Third, the research had applied the theory-informed analysis; it has explicitly attempted to match the empirical themes with the theoretical frameworks such as Risk Communication Theory, the Crisis and Emergency Risk Communication (CERC) model, Disaster Risk Reduction (DRR) theory, and the organizational preparedness theory. The fact that a theory-finding alignment table is not only present but also shows that the findings have a foundation in and can be understood within theoretical bases recognizable to the reader. The theoretical triangulation enhances the credibility of the interpretations in that they are correlated with the available scholarly knowledge.

Fourth, through the excerpts of verbatim interviews, there is thick description, and it gives the reader a chance of tracking down interpretations as given by the participants. This increases the level of credibility, as themes can be shown to be true to the experiences of the participants and not the researcher.

Lastly, the sample size provides additional credibility that is provided by the admittance of multiple public college representatives, so that the results are not likely to be based on isolated or atypical practices. A combination of these strategies would help to make the qualitative findings analytically sound, theoretically informed, and appropriate to inform the academic discourse and disaster management policy.

CONCLUSION

This paper has investigated Disaster Risk Reduction and Management (DRRM) communication in Punjab, based in Pakistan, but with regard to the public colleges in District Chiniot. The study was conducted through a qualitative approach with the assistance of the student survey data, which examined the practices of communication in the institution, preparedness for evacuations, coordination, and issues concerning school safety during disaster response situations. The results mean a lot in understanding the way disaster-related information is disseminated at the institutional level and the extent to which preparedness solutions have been adopted in the education sector.

The study concludes that college principals are very conscious and aware of the current DRRM communication systems. The institutional leadership is core in the initiation of emergency communication, the directing of staff and students, and coordination with the education and disaster management authorities. Developed protocols in sharing emergency information, which are through announcements, communication mediated by educators, and mobile technology, demonstrate adherence to official safety standards and adherence to disaster management procedures developed at the national level.

Regarding evacuation planning and preparedness, most colleges have evacuation plans and evacuation drills to enable students and staff to be familiarized with emergency procedures. Such

practices are beneficial in terms of preparation because they minimize panic and enhance response behaviour in times of emergency. Nonetheless, the research established that frequency and regularity of drills differed, which states the necessity to implement the drills in institutions more systematically and standardly.

The results also show the need to consult with the education departments and disaster management departments, especially in large-scale incidents like floods or extreme weather conditions. Although principals spoke of guidance and instructions given to them by higher authorities, the process of coordination was usually triggered by events instead of being persistent and did not allow dealing with proactive preparedness and early risk communication.

Notwithstanding the institutional consciousness and current infrastructure, the research indicates that there are major challenges that inhibit the efficient adoption of the DRRM communication and school safety measures. These are power outages, untrustworthy mobile and internet connections, inadequate emergency facilities, and a lack of DRRM-specific training of personnel. These limitations decrease the integrity of the communication systems in practice during real disaster events and produce a discrepancy between the planned processes and the immediate response abilities.

Overall, the analysis has shown that the conceptualization of DRRM communication is present in the public schools of Punjab but is limited operationally. Although there are leadership devotion and fundamental communication frameworks, structural and infrastructural constraints compromise the uniformity and precision of disaster preparedness. To tackle these issues, one must go beyond the concept of awareness to the notion of long-term investment into training, infrastructure, and the ability to communicate with a variety of people.

Policy-Level Recommendations

The National Disaster Management Authority (NDMA), with the partnership of the Provincial Disaster Management Authority (PDMA Punjab) and the education departments, is recommended to produce standardized guidelines on communication of DRRM to the public schools. Such protocols must have the roles, communication chain, evacuation requirements, and reporting systems that are well defined to have uniformity among institutions. Principals, teachers, and administrative staff should be forced to attend DRRM communication and school safety training. Periodic capacity-building programs in line with NDMA structures would improve institutional preparedness and diminish the aspect of making decisions ad hoc in case of an emergency.

The provincial education policies and monitoring systems should incorporate disaster preparedness and communication. This would guarantee long-term focus, financial allocation, and responsibility for school safety programs. Similarity Formal coordination between schools and district education offices, PDMA Punjab, and local emergency services should be enhanced by regular meetings, simulations, and information-sharing platforms. This would change the coordination to proactive and not reactive disaster preparedness.

Colleges operated by the government should regularly hold evacuation exercises at least twice a year with the students, teachers, and non-teaching staff involved. Evaluation of drills and feedback should be employed to work out communication clarity and efficiency in response. To overcome power and network failure, the colleges are advised to embrace layered communication systems, which involve low-tech solutions like megaphones, printed safety instructions, notice boards, and assigned staff messengers, as well as electronic solutions. Awareness of disaster safety must be incorporated into the normal activities of academics or co-curricular activities. Participation by students in the form of safety committees or disaster response teams can be used to boost participation and build a culture of preparedness.

Basic emergency equipment should be provided in schools, including first aid kits, fire extinguishers, evacuation route signs, and power backups. These are practical interventions that increase efficiency in communication in case of an emergency. All the institutions would have current, written DRRM communication and evacuation plans. The drills and actual emergency response will be reviewed and documented regularly to aid the learning and improvement of institutions.

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